

Advanced Structural Health Monitoring System for Comprehensive Real-Time Vehicle Characterization, Phase I

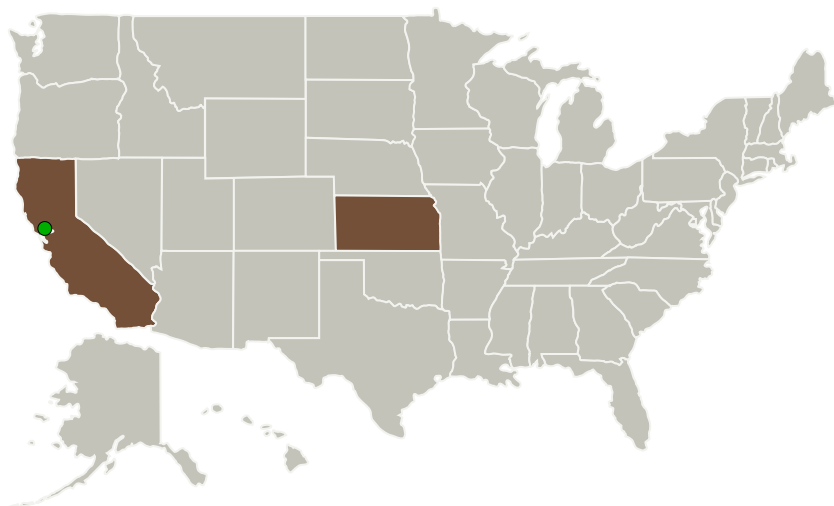
Completed Technology Project (2010 - 2011)



Project Introduction

In providing an innovative solution to improving information technologies and health management systems, AGNC is proposing a significant technological achievement with the Advanced Structural Health Monitoring System for Comprehensive Real-Time Vehicle Characterization. During in-flight conditions, this system is able to not only provide the status of information such as regarding the flight envelope, but also make accurate diagnostic and prognostic statements of aircraft subsystems. Real-time capabilities are enabled using intelligent algorithms and advanced techniques to provide both time and frequency localization of data. As such, the health management system is able to provide information quickly enough as to monitor an aircraft subsystem in a highly dynamic environment and to make statements regarding anomalies as well as future problems. A key enabling technology is newly developed low-power sensors that offer significant advantages over traditional sensor methods. In addition, automated reasoning technologies to improve sustainability, increase identification of system degradation, and enhance scientific understanding include data fusion, and advanced decision-making, among others. With this system, a comprehensive image of the system/subsystems, and in particular, the structural components, is provided in real-time.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
American GNC Corporation	Lead Organization	Industry Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Simi Valley, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
The University of Kansas Center for Research, Inc.	Supporting Organization	Industry	Lawrence, Kansas

Primary U.S. Work Locations

California	Kansas
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Project Transitions

January 2010: Project Start

January 2011: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138801>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

American GNC Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

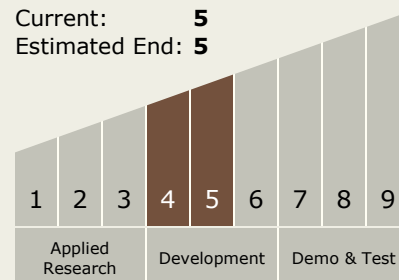
Carlos Torrez

Principal Investigator:

Tasso Politopoulos

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX10 Autonomous Systems
 - └ TX10.2 Reasoning and Acting
 - └ TX10.2.5 Fault Diagnosis and Prognosis

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System